Weather Data and Updates

Weather and climate influence all other monitoring efforts, so it is very important for the Pacific Island Network (PACN) to get good data from our weather stations. Good data means collecting data more than 85% of the year (300 days or more). Although records for all weekdays, consistent across a year, can still be analyzed with statistical interpretation, it is best to include weekends. Also, the importance of a permanent location for an individual weather station can't be overemphasized. All long-term data is only of value if the station never moves.

The PACN primarily relies on two kinds of weather stations; COOP (Cooperative Observer Program), and RAWS (Remote Automated Weather Stations). COOP stations are manned by specific personnel and gauges need to be read daily. RAWS stations send data via satellite to WRCC (Western Regional Climate Center) for validation and are then downloaded to the web, where we can retrieve it for our specific analyses.

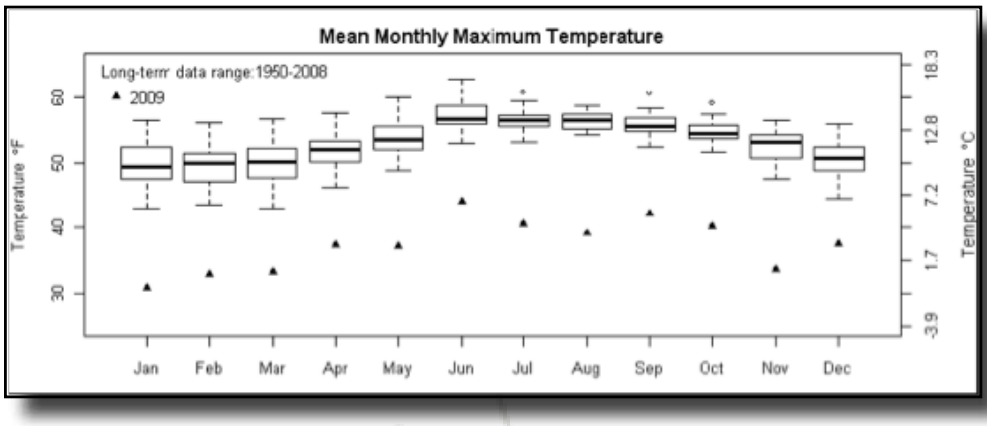
The PACN has recently obtained nine new weather stations, made by Campbell Scientific, Inc. (CSI). WRCC personnel are setting these up on the RAWS network, and they need to be maintained by PACN/park personnel.

Four new stations are being set up on Hawai'i island. Two are destined for the Kahuku unit of Hawai'i Volcanoes NP. The two remaining Hawai'i Island stations are Pu'ukoholā NHP and Pu'uhonua o Hōnaunau NHP bound. Two more CSI stations head to Kalaupapa NHP, two to the NP of American Samoa, and the last to American Memorial Park. All stations will be operational by fall 2011.

Kaloko-Honokōhau NHP has a major weather mystery where two stations, one RAWS and one COOP, are located only 2,700 meters apart. Amazingly, the difference in 2009 precipitation between the two stations was 4.9 inches; a 26% difference! 2008 data was equally bizarre. An investigation into why two stations so close to one another have such different precipitation readings needs to be conducted.

The volcanic plume from Halema'uma'u (Hawai'i Volcanoes NP) influences weather patterns downwind.

Another weather aberration occurs at the Mauna Loa Slope Observatory where weather data is taken five days per week, all year long. 2009 data, compared with long-term data collected at the observatory is markedly interesting.



Mean monthly maximum temperature is recorded at Mauna Loa Slope Observatory at 3,401 meters elevation.

A careful look at the above graph reveals temperatures approximately 10°F lower than the lowest mean temperature from 1950-2008. We have no explanation for the differences, and nothing points to a malfunction in the equipment. This anomaly will make the 2010 data very interesting to analyze.

—T. Casey
Biological Science Technician

Another weather tidbit:
Hawaii's warmest months are not June and July, but August and September. Its coolest months are not December and January, but February and March, reflecting the seasonal lag in the ocean's temperature.

Remember! Whether it rain, or whether it snow! We must have weather, whether or no. Whether it's cold or whether it's hot! We must have weather, whether or not. (Farnham,1936, A Place in the Country, Funk and Wagnall's).

Background:
New CSI weather station